RUFFED GROUSE AND AMERICAN WOODCOCK STATUS IN MICHIGAN, 2003

Michigan Department of Natural Resources
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Ruffed grouse (*Bonasa umbellus*) and American woodcock (*Scolopax minor*) are popular forest game birds that are pursued by about 125,000 Michigan hunters annually. Hunters spend an average of 7 to 8 days hunting grouse and woodcock each year, adding up to almost a million days of recreation in Michigan annually (Frawley 2002). Non-hunters also place a high value on grouse and woodcock. Many people enjoy listening to or watching drumming male grouse and the courtship displays of woodcock. Additionally, grouse and woodcock are important components of early successional forest habitat and indicators of healthy forest ecosystems.

METHODS

The Michigan Department of Natural Resources (DNR) uses several surveys to monitor ruffed grouse and woodcock populations, including hunter cooperators and spring breeding surveys. Cooperator surveys are based on a group of hunters who record numbers of hours hunted and ruffed grouse and woodcock flushed each day. Cooperators are volunteer hunters who express an interest in participating and are willing to maintain hunting records every year. Data obtained from cooperating hunters are summarized as the number of grouse or woodcock flushed per hour of hunting. Flush rates reported by cooperators provide an early indicator of harvest, but the final estimates of hunting effort and harvest come from a mail survey of randomly selected hunters.

DNR personnel and volunteers conduct spring breeding surveys of ruffed grouse and woodcock using roadside routes. Each route has listening stops that are consistent from year to year. The number of ruffed grouse drums or woodcock heard during a fixed time

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interval is recorded at each stop. Because timing of breeding and habitat preferences differ for the two species, separate surveys are conducted. The woodcock breeding survey is coordinated by the United States Fish and Wildlife Service (USFWS) in cooperation with the DNR. Ruffed grouse routes were established in locations of known grouse populations. Woodcock routes were also located non-randomly prior to 1968; however, beginning in 1968, routes were relocated within randomly-chosen 10-minute blocks (Kelley 2003). Data for both surveys are summarized as the number of woodcock or grouse heard per survey route (Luukkonen et al. 1998).

In addition, volunteers band over 1,000 woodcock each spring to monitor recruitment and trends in survival (Krementz et al. 2003). The data are summarized as the number of woodcock chicks observed and banded per 100 hours of effort.

RESULTS AND DISCUSSION

Review of Recent Hunting Seasons

Ruffed Grouse

Hunter records were available from 253 cooperators who hunted in 2002. Hunting effort among cooperators in 2002 was 6,101 hours. The number of ruffed grouse flushed per hour by cooperators in 2002 declined statewide compared to flush rates from 2001. Grouse flush rates were highest in zone 1 (Upper Peninsula), followed by zones 2 (Northern Lower Peninsula), and 3 (Southern Lower Peninsula), respectively (Figure 1 and Appendix A). The highest average flush rates reported by cooperators were during October 16-31 in Zone 1. The highest average flush rates in zones 2 and 3 were during the November 1-14 (Table 1).

Analysis of 2001 harvest mail survey data indicated a harvest of about 381,000 grouse (Frawley 2002). Harvest of ruffed grouse seems to follow population cycles (Figures 1, 2, and 3). This population cycle appears similar to the fluctuations observed in Wisconsin and Minnesota (Figure 4).

The number of grouse hunters in Michigan has remained relatively stable despite periodic declines in grouse numbers, indicating that even if grouse numbers are down and harvest is low, hunters will still pursue grouse. The proportion of small game license purchasers who hunted ruffed grouse has actually increased since 1958, as the number of small game license holders has steadily decreased and grouse hunters remained stable (Figure 2).

American Woodcock

In 2002, the number of woodcock flushed per hour by cooperators was higher in Zone 1 and Zone 2 than in 2001, but lower in Zone 3. Woodcock flush rates were highest in Zone 2, followed by Zones 1 and 3, respectively (Figure 5 and Appendix B). Average flush rates peaked during October 1-15 and then declined during the October 16-October

31 period in Zones 1, 2, and 3 (Table 1). Seasonal changes in woodcock flush rates most likely reflect southward fall migrations (Luukkonen et al. 1998) and pre-migratory concentration of woodcock. Preliminary research in Michigan revealed that the median migration date for radio-marked woodcock was October 22 (Myatt and Krementz 2003). The earliest departure date was September 20.

From 1958 to 1976 there was an increase in woodcock harvest in Michigan. In 1976 there was a record harvest of 390,000 birds. During that year there were approximately 126,000 woodcock hunters spending about 908,000 days afield. Since that all time record harvest, there have been fluctuations in harvest to the present level (Figure 6). Analysis of 2001 data indicated a Michigan harvest of about 154,000 woodcock (Frawley 2002). There were approximately 51,000 woodcock hunters in 2001 and they spent about 323,000 days afield (Figure 6).

Spring Breeding Surveys

Ruffed Grouse

Ruffed grouse drumming counts were conducted statewide along 122 survey routes in April and May 2003. A statewide drumming survey was also conducted in 2002, which provided data from 154 routes. A paired t-test was performed on 110 routes run in both 2002 and 2003. Statewide, the number of drums heard per route was similar in 2002 and 2003 (paired t=-0.34, P=0.73). The number of drums heard per route was 8.90 in 2002 and 9.12 in 2003. The ruffed grouse index in Zone 1 was 12.1 drums heard per route in 2003 which is similar to the 11.1 drums heard per route in 2002. The ruffed grouse index in Zone 3 decreased from 9.0 in 2002 to 6.5 in 2003, although this was based on a small number of routes completed ($N \leq 30$). The ruffed grouse index in Zone 2 increased slightly from 8.2 in 2002 to 9.1 in 2003.

Ruffed grouse have ten-year cycles in abundance over much of Canada, Alaska, and the Great Lakes states of Wisconsin, Minnesota and Michigan (Rusch et al. 1999). Biologists in Minnesota have conducted drumming surveys since 1949, and grouse cycles have peaked near the end of each decade (Dexter 1999, Figure 4). Many theories have been proposed to explain these cycles including diseases, weather, forest fires, sunspots, starvation, crowding, predators, genetic changes, and chance (Rusch 1989).

The low in grouse abundance in recent times occurred during 1992-1994 for most of the state (Figures 1, 2, and 3) and it appears that ruffed grouse may again be nearing the low in their cycle. The largest increase in grouse abundance since the lows during 1992-94 occurred in Zone 1 (Figures 1 and 3).

American Woodcock

Results of woodcock breeding surveys were based on preliminary analysis of data from 89 survey routes (Kelley 2003). Woodcock in Michigan increased 11.3% from 2002, but

this was not a statistically significant difference ($P > 0.10$). The breeding woodcock index increased 8.7% from 2002 levels in the entire central region (Illinois, Indiana, Manitoba, Michigan, Minnesota, Ohio, Ontario, and Wisconsin). Ohio was the only area that experienced a decrease in the number of woodcock heard on the survey, but this was not statistically significant. Although there was an increase this year in Michigan's breeding survey, the state has experienced a statistically significant long-term decline of 1.7% per year since 1968. An average of 3.53 singing-males was heard per route in Michigan. In the central region, an average of 2.16 singing-males was heard per route.

The 2002 woodcock recruitment index for the central region was 1.6 immature woodcock per adult female (Kelley 2003). The long-term regional average is also 1.6. In 2001 the recruitment index was 1.3. Woodcock banders in Michigan spent approximately 2,000 hours afield in 2003 and banded 948 chicks. The average brood size observed was 3.1. Woodcock banded per 100 hours may be useful as an index of local woodcock production trends. In 2003 there were 60.2 chicks observed and 46 chicks banded per 100 hours of search time Last year there were 68.4 chicks observed and 51.4 chicks banded per 100 hours of search time and the average brood size observed was 3.1.

The long-term reduction in the woodcock population index raises questions and concerns about available habitat and the effects of hunting. The declining availability of quality habitat is believed to be a primary cause for the decline in the population (Dessecker and Pursglove 2000). In an attempt to halt the population decline, the U.S. Fish and Wildlife Service has adjusted woodcock hunting season dates or reduced bag limits 4 times since 1968.

A 3 year study in Michigan, Minnesota, and Wisconsin is being conducted to document survival, fall migration routes, timing, and habitat use of woodcock breeding in the western Great Lakes region (Myatt and Krementz 2003). Woodcock fall survival on both hunted and nonhunted (or lightly hunted) sites will be estimated for a three-year period (Doherty and Anderson 2002). In Michigan, an area in Dickinson County was closed to woodcock hunting beginning in 2002 and this area will remain closed through the 2004 hunting season. A map of this area can be found in the 2003-2004 Michigan Hunting and Trapping Guide.

2003 Grouse and Woodcock Hunting Forecast

Ruffed Grouse

The outlook for the upcoming season does not look as promising as it did in 1999 and 2000, but it still looks favorable for grouse. Survey data suggests that the Michigan population peaked in 1999. The population is most likely on the downward slope of the cycle, but Michigan has an abundance of forested lands that support ruffed grouse and if spring production was favorable, hunters in Michigan may take as many as 390,000 grouse this fall. Hunters should note that increased or decreased abundance of animals at a regional scale does not ensure the same trend locally.

American Woodcock

Woodcock hunters may expect a season similar to last year. The U.S. Fish and Wildlife Service mandated that the woodcock hunting season open no earlier than the Saturday closest to September 22. This year the opening date is September 20. Hunters may take 150,000 woodcock this fall. While good numbers of grouse and woodcock can be found in all parts of Michigan, the highest densities are located in the northern two-thirds of the state.

ACKNOWLEDGEMENTS

We thank all the cooperators who kept and provided grouse and woodcock hunting records and participated in banding woodcock. Steve Merchant and Adam Bump provided data for Minnesota and Wisconsin drumming counts. Many DNR employees and volunteers conducted spring breeding surveys and assisted in data entry. Mike Bailey, Brian Frawley, David Luukkonen, Sarah Mayhew, and Bill Moritz reviewed an earlier version of this report. Portions of this report were copied in whole or in part from previous status reports. Similar reports may be found at www.michigan.gov/dnr.

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Table 1. Average ruffed grouse and American woodcock flush rates, by two-week intervals, as reported by cooperating hunters in 2002.

	Zone		
Species and dates	1	2	3
Ruffed grouse			
September 15 - 30	1.66	1.56	0.83
October 1 - 15	1.69	1.27	1.00
October 16 - 31	1.71	1.42	1.04
November 1 - 14	1.19	1.59	1.08
December 1 - 15		1.41	0.54
December 16 - January 1		1.41	0.72
American woodcock			
September 15 - 30	1.17	1.98	0.93
October 1 - 15	1.22	2.62	1.36
October 16 - 31	1.14	1.57	1.27
November 1 - 14	0.02	0.32	0.64
December 1 - 15		0.00	0.00
December 16 - January 1		0.09	0.07

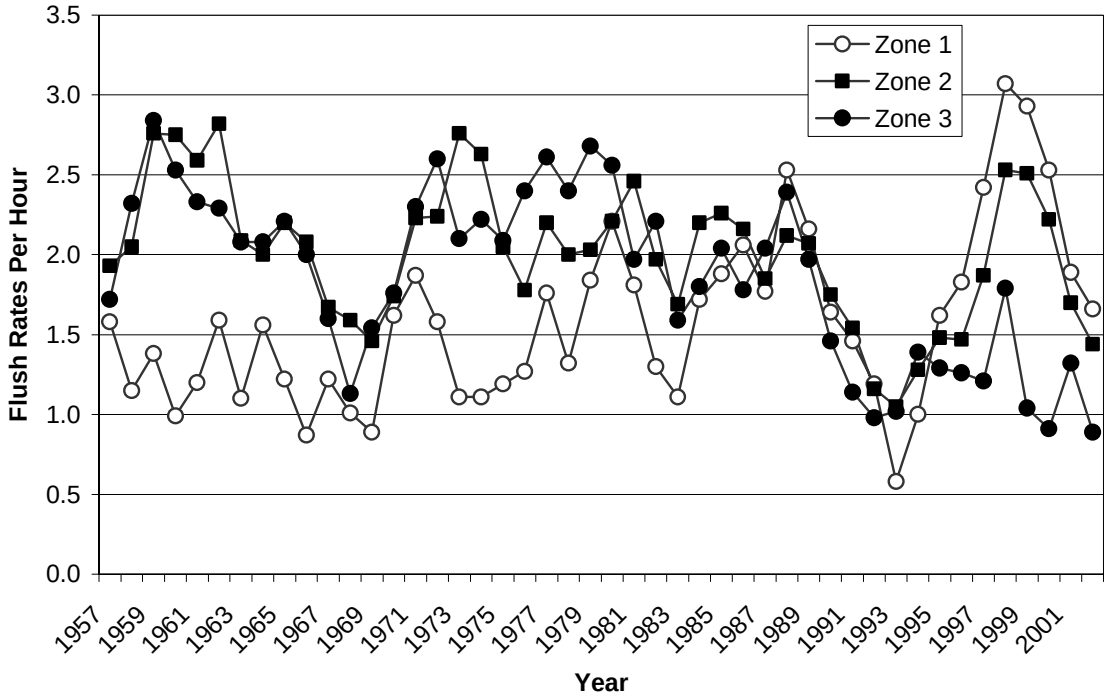


Figure 1. Ruffed grouse flush rates reported by cooperating hunters, 1957-2002.

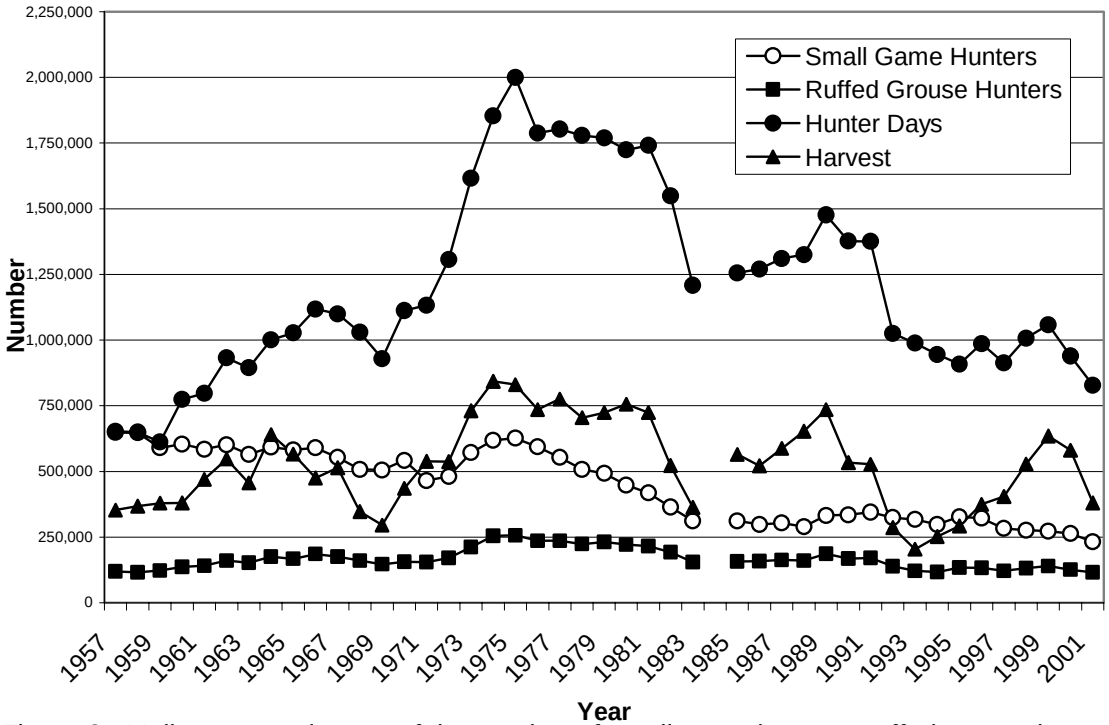


Figure 2. Mail survey estimates of the number of small game hunters, ruffed grouse hunters, ruffed grouse harvest, and hunter days in Michigan, 1957-2001 (estimates are not available for 1984).

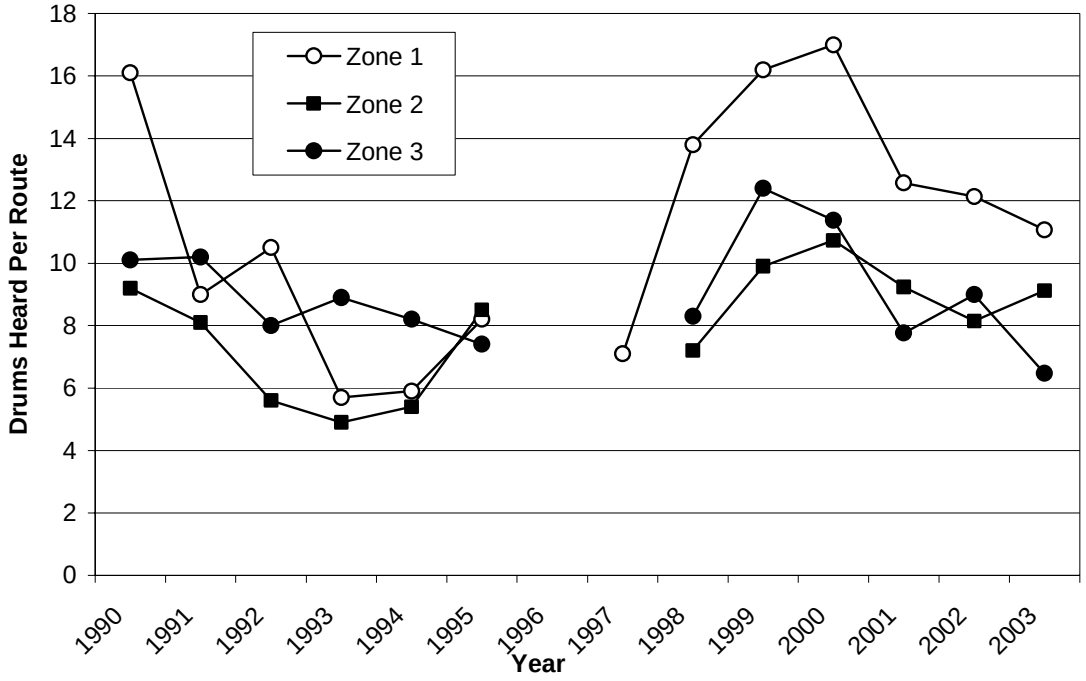


Figure 3. Ruffed grouse breeding population index (drums per route) in Michigan, 1990-2003. Drumming surveys were not conducted in 1996 and were conducted only in Zone 1 in 1997.

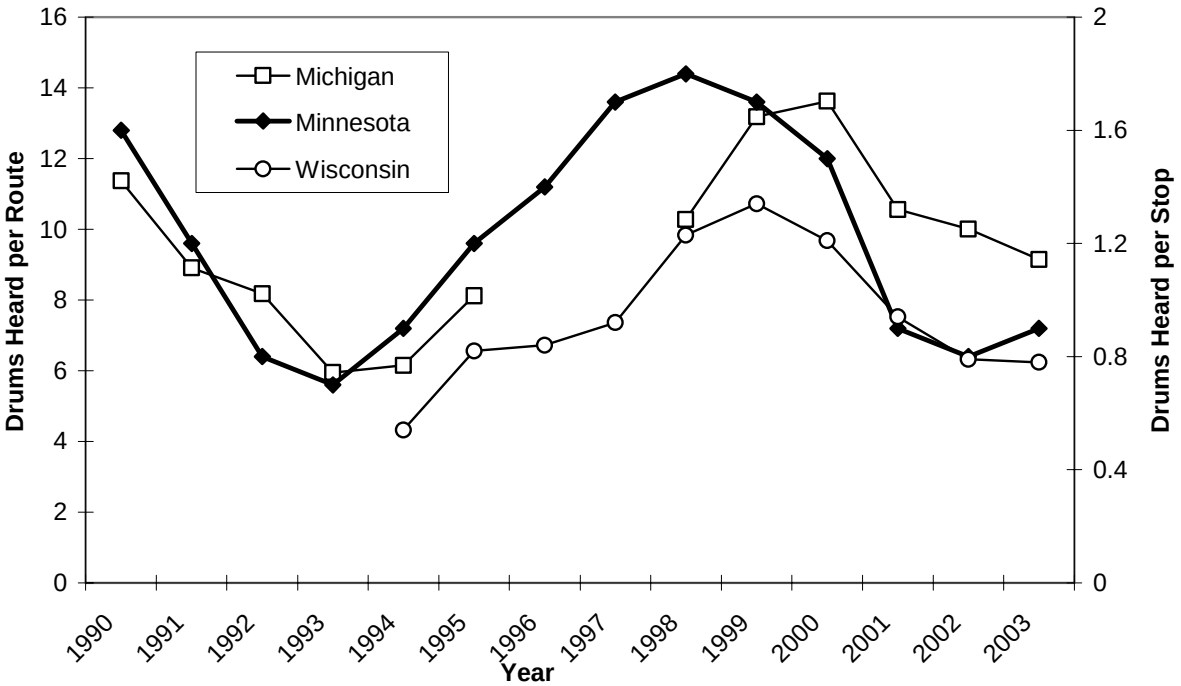


Figure 4. Ruffed grouse breeding population indices from Michigan (drums per route) and Minnesota and Wisconsin (drums per stop), 1990-2003. Wisconsin data for 2003 is preliminary. Michigan statewide data is not available for 1996 and 1997.

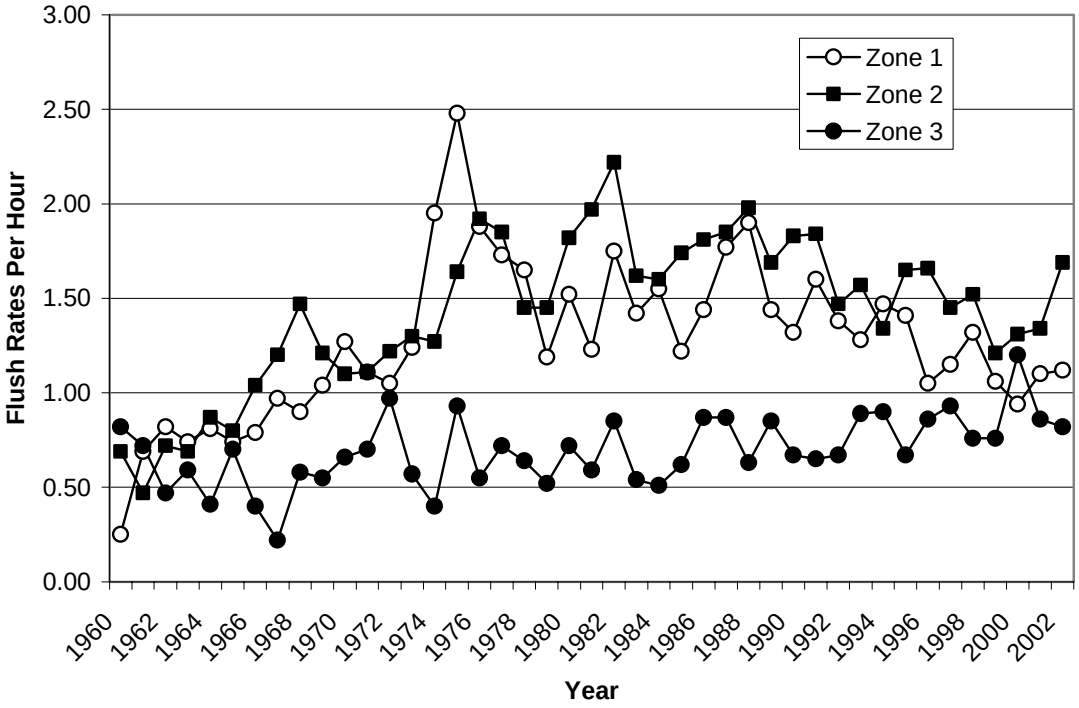


Figure 5. American woodcock flush rates reported by cooperating hunters, 1960-2002.

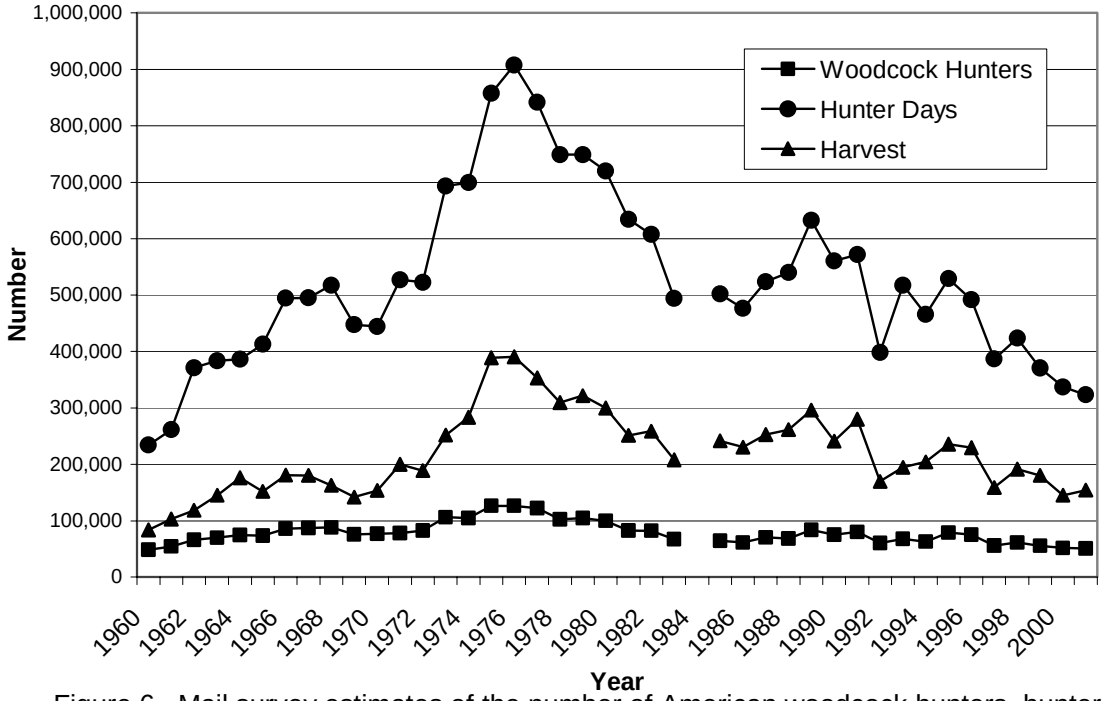
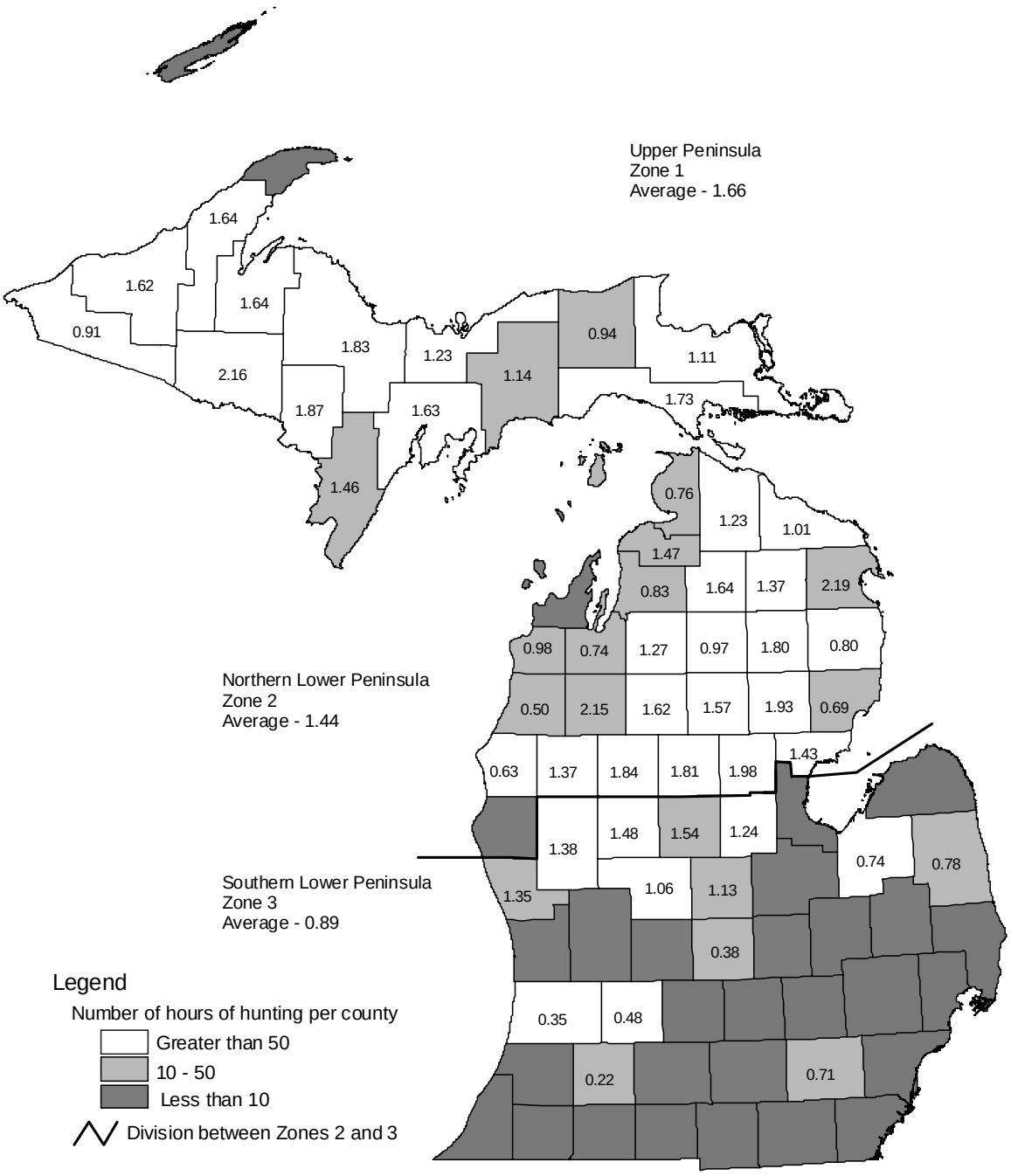
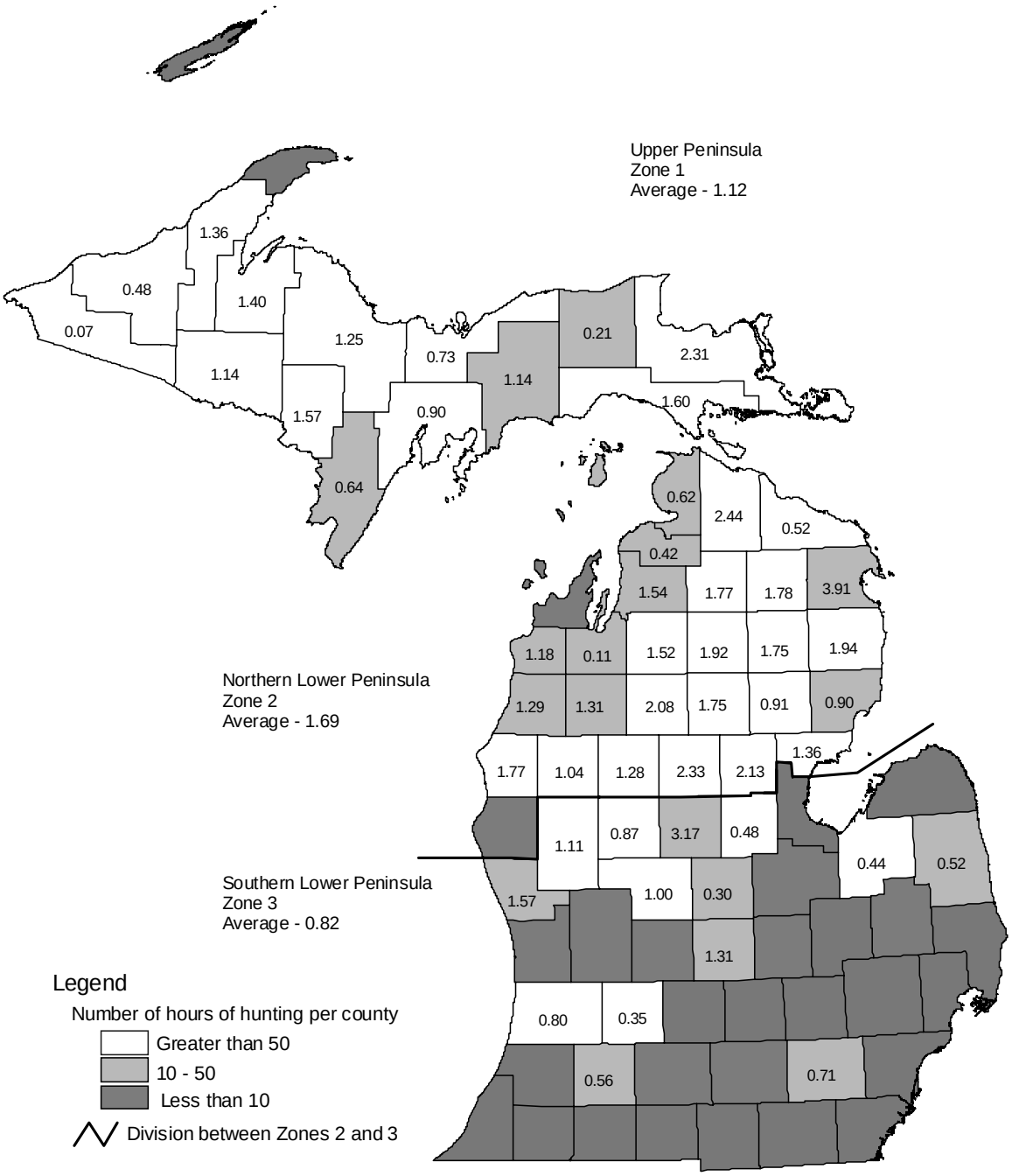


Figure 6. Mail survey estimates of the number of American woodcock hunters, hunter days, and harvest in Michigan, 1960-2001 (estimates not available for 1984).



Appendix A. Average ruffed grouse flushed per hour by cooperators in 2002.



Appendix B. Average American woodcock flushed per hour by cooperators in 2002.